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## **New approach to anomalies of thermodynamic properties of mixed valence compounds**

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A new interpretation for the specific heat and thermal expansion anomalies is proposed for mixed valence compounds and applied to  $Sm_{1-x}La_xB_6$  and  $Ce_{1-x}La_xNi$ . These thermodynamic quantities are considered as a sum of separate contributions connected with lattice and electronic excitation spectrum. The specific heat and thermal expansion anomalies of  $Sm(La)B_6$  at low temperature is found to result from features of unusual  $f$ -electron excitation spectra as well as conduction electron gap in the density of states and phonon anomalies. In particular, for  $SmB_6$  at  $T > 80$  K a significant negative thermal expansion anomaly arises due to renormalization of a phonon frequency in an intermediate valence state. The strong anomaly of a thermal expansion temperature dependence of  $(Ce(La)Ni)$  is mainly determined by a  $f$ -electron excitation spectrum at  $T = 20 - 300$  K. But at low temperature ( $T < 25$  K) the peculiarities of lattice excitations spectrum due to an unstable valence state play an important role.